CLAIMS

IN THE CLAIMS:

1. A method for continuous fibrous monolith composite coextrusion comprising:

a) producing a first material-laden composition comprising a thermoplastic polymer and at least about 40 volume % of a ceramic or metallic particulate;

b) extruding the first material laden composition into a filament;

c) producing a second material-laden composition comprising a thermoplastic polymer and at least about 40 volume % of a ceramic or metallic particulate that is different in composition than the first material laden composition;

d) passing the filament through an coextrusion assembly, the coextrusion assembly comprising an extrusion head, a tapered nozzle, a spinnerette, a spinnerette housing, a guide rod support, and a guide rod;

e) coating the filament with the second material-laden composition as the filament passes through the coextrusion assembly to form a coated filament;

f) arranging the coated filament into a desired architecture to form a fibrous monolith composite.

2. A coextrusion assembly for a continuous coextrusion process comprising:

an extrusion head, a tapered nozzle, a spinnerette, a spinnerette housing, a guide rod support, and a guide rod.

3. A method for continuous formation of a fibrous monolith material comprising steps of:

a) forming an elongate filament of a cell material;

b) continuously feeding the filament of cell material through a first nozzle opening of a first nozzle member into a chamber;

c) continuously extruding a boundary material into said chamber and about the cell material as the cell material is discharged from the first nozzle opening; and

d) continuously extruding the composite cell and boundary material from the chamber through a second nozzle opening.

4. The process of claim 3 wherein the second nozzle opening is larger in cross-sectional area than the cross-sectional area of the first nozzle opening.

5. The process of claim 3 including a first nozzle member having a conical outside surface and with a central discharge first nozzle opening.

6. The process of claim 3 including a second nozzle member having a conical passage with a narrow discharge end comprising the second nozzle opening.

7. The process of claim 3 wherein the filament is formed by compressing a cell material in a chamber through the first nozzle opening.

8. The process of claim 3 wherein the first nozzle opening is circular.

9. The process of claim 3 wherein the second nozzle opening is circular.

10. The process of claim 3 wherein the first nozzle opening is polygonal.

11. The process of claim 3 wherein the second nozzle is polygonal.

12. The process of claim 4 wherein cell material is selected from the group consisting of metal, metal alloy, carbide, nitride, boride, oxide, phosphate and silicide.

13. The process of claim 3 wherein the boundary material is selected from the group consisting of metal, metal alloy, carbide, nitride, boride, oxide, phosphate and silicide.

14. The process of claim 3 wherein the first nozzle opening includes means for adjusting the area of said opening.

15. The process of claim 3 wherein the second nozzle opening includes means for adjusting the area of said opening.

16. The process of claim 3 including the step of injecting a second boundary material into the chamber continuously simultaneously with said first boundary material.

17. The process of claim 3 including the step of injecting an additional material into the chamber in contact with the boundary material only.

18. The process of claim 3 including the step of injecting an additional material into the chamber in contact with both the cell and boundary material.

19. The process of claim 3 including the step of simultaneously feeding a second cell material into the chamber with the first cell material.